[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2021-0447; Project Identifier AD-2021-00131-E]

RIN 2120-AA64

Airworthiness Directives; Pratt & Whitney Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for all Pratt & Whitney (PW) PW1500G and PW1900G series turbofan engines. This proposed AD was prompted by reports of cracks in the high-pressure compressor (HPC) rotor shaft that resulted in in-flight shutdowns (IFSDs) and unscheduled engine removals (UERs). This proposed AD would require removal and replacement of the HPC front hub and HPC rotor shaft. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

• Federal eRulemaking Portal: Go to https://www.regulations.gov. Follow the instructions for submitting comments.

• Fax: (202) 493-2251.

• Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

• Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Pratt & Whitney, 400 Main Street, East Hartford, CT 06118; phone: (800) 565-0140; fax: (860) 565-5442;

email: help24@pw.utc.com; website: https://fleetcare.pw.utc.com. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

Examining the AD Docket

You may examine the AD docket at https://www.regulations.gov by searching for and locating Docket No. FAA-2021-0447; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Mark Taylor, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7229; fax: (781) 238-7199; email: Mark.Taylor@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include "Docket No. FAA-2021-0447; Project Identifier AD-2021-00131-E" at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to https://www.regulations.gov, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C.

552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as "PROPIN." The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Mark Taylor, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA received reports of cracks in the HPC rotor shaft that resulted in vibration and subsequent IFSDs and UERs. The manufacturer determined that the threads on the HPC rotor shaft were not optimized for load distribution, which resulted in vibration stresses. During one occurrence, oil was released at the high-pressure turbine (HPT) disk bore location. The manufacturer redesigned the HPC front hub and HPC rotor shaft for increased durability and decreased vibration stress. The redesigned HPC front hub is made from nickel to help with corrosion resistance. The threads on the HPC rotor shaft were also redesigned to help distribute the load on the threads and decrease vibration stress. This condition, if not addressed, could result in release of an HPT disk, damage to the engine, and damage to the airplane.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

Related Service Information

The FAA reviewed Pratt & Whitney Service Bulletin (SB) PW1000G-A-72-00-0154-00A-930A-D, Issue No. 001, dated May 7, 2021 (PW1000G-A-72-00-0154-00A-930A-D), and Pratt & Whitney SB PW1000G-A-72-00-0101-00B-930A-D, Issue No.

001, dated May 7, 2021 (SB PW1000G-A-72-00-0101-00B-930A-D). These SBs describe procedures for removing and replacing the HPC front hub and HPC rotor shaft.

Proposed AD Requirements in this NPRM

This proposed AD would require removal and replacement of the HPC front hub and HPC rotor shaft.

Differences Between this Proposed AD and the Service Information

Pratt & Whitney SB PW1000G-A-72-00-0154-00A-930A-D and Pratt & Whitney SB PW1000G-A-72-00-0101-00B-930A-D provide instructions to concurrently perform the actions in Pratt & Whitney SB PW1000G-A-72-00-0157-00A-930A-D and SB PW1000G-A-72-00-0105-00B-930A-D, respectively. This AD does not require performance of the actions described in Pratt & Whitney SB PW1000G-A-72-00-0157-00A-930A-D or SB PW1000G-A-72-00-0105-00B-930A-D since these SBs describe ring seal replacement, which is not related to the unsafe condition addressed by this AD.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 94 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Replace HPC front hub and HPC rotor shaft	25.75 work-hours x $85 per hour = $2,188.75	$120,090	$122,278.75	$11,494,202.50

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress

charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

(1) Is not a "significant regulatory action" under Executive Order 12866,

(2) Would not affect intrastate aviation in Alaska, and

(3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

Pratt & Whitney: Docket No. FAA-2021-0447; Project Identifier AD-2021-00131-E.

(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to Pratt & Whitney PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A model turbofan engines.

(d) Subject

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

(e) Unsafe Condition

This AD was prompted by reports of cracks in the high-pressure compressor (HPC) rotor shaft that resulted in in-flight shutdowns and unscheduled engine removals. The FAA is issuing this AD to prevent cracking of the HPC rotor shaft. The unsafe condition, if not addressed, could result in release of a high-pressure turbine disk, damage to the engine, and damage to the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Action

At next engine shop visit after the effective date of this AD, remove HPC front hub, part number (P/N) 30G1910 or 30G3210, and HPC rotor shaft, P/N 30G1854, 30G3109, 30G4995, 30G4953, or 31G0014, from service and replace each part with a part eligible for installation.

(h) Definitions

(1) For the purpose of this AD, an “engine shop visit” is the induction of an engine into the shop for maintenance involving the separation of pairs of major mating

engine case flanges, except for the following, which do not constitute an engine shop visit:

(i) Separation of engine flanges solely for the purposes of transportation without subsequent maintenance does not constitute an engine shop visit.

(ii) Separation of engine flanges solely for the purpose of replacing the fan without subsequent maintenance does not constitute an engine shop visit.

(2) For the purpose of this AD, a "part eligible for installation" is:

(i) For a HPC front hub: any HPC front hub with a P/N other than P/N 30G1910 or 30G3210; and

(ii) For a HPC rotor shaft: any HPC rotor shaft with a P/N other than P/N 30G1854, 30G3109, 30G4995, 30G4953, or 31G0014.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in Related Information. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(j) Related Information

For more information about this AD, contact Mark Taylor, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7229; fax: (781) 238-7199; email: Mark.Taylor@faa.gov.

Issued on May 27, 2021.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,
Compliance & Airworthiness Division,
Aircraft Certification Service.
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